U.S. Department of Transportation
Federal Aviation Administration

Subject:	Requirements of FAR 25.1357(e)	Date:	April 20, 1999
From:	Manager, Airplane and Flight Crew Interface Branch, ANM-111	Reply to Attn. of:	
To:	Jose Flores / Todd Dixon, ACE-116W		

In response to your memorandum dated February 23, 1999; as discussed during the telephone conversation between Mr. Todd Dixon of ACE-116W and Mr. Massoud Sadeghi of ANM-111 on April 19, 1999, requirements of FAR 25.1309 cannot be used to show compliance to the requirements of FAR 25.1357(e). These two rules are independent and each satisfies a different minimum safety intention. Thus, they must be considered and addressed separately and independently in every certification programs.

FAR 25.1357(e) requires “each circuit for essential loads must have individual circuit protection.” The main purpose here is that sufficient and independent protection and control is provided for each and every function essential to continued safe flight and landing of the aircraft. Also no single fault in a circuit performing an essential function should cause the loss of power to multiple circuits performing essential functions. This is to minimize (in fact, to avoid) the higher degree of risks to the aircraft, crew, and passengers which could result from the loss of essential functions.

However, recognizing that higher levels of system integration are being introduced into new and modern aircraft along with substantially higher levels of reliability achieved in the electronic/electrical circuits, providing 100% individual circuit protection may not always be possible or necessary. In this case, all the functions within an electrical load, protected by a single circuit protective device must, with sound engineering judgment, be carefully and thoroughly evaluated for the critically of the functions performed by the circuits inside the load. The evaluation should include all aspects and effects on crew and aircraft performance. The conclusions reached should be independent of the decisions made in the previous or other ongoing certification programs due to the uniqueness of their system designs and architectures. The goal in mind should be meeting/exceeding the intended minimum safety requirements of FAR 25.1357(e).

For questions and/or assistance regarding this matter, please contact Massoud Sadeghi at (425) 227-2117.

/s/
Stephen Boyd for
John McGraw

cc:
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